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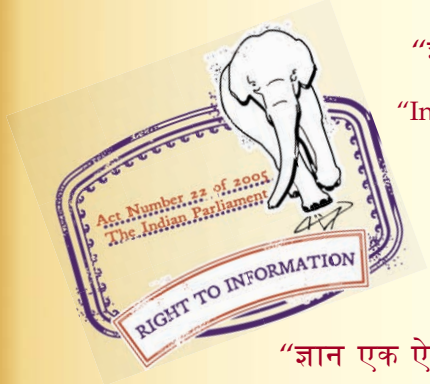

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Indian Standard

SPECIFICATION FOR PROTEIN-ENRICHED BISCUITS

(First Revision)

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Indian Standard

SPECIFICATION FOR PROTEIN-ENRICHED BISCUITS

(First Revision)

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Indian Standard

SPECIFICATION FOR PROTEIN-ENRICHED BISCUITS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 21 February 1986, after the draft finalized by by the Nutrition Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Initiative is now being taken to utilize oilseed protein concentrates or isolates in common manufactured food items. One possibility which has been tried in the country for the past several years is to market protein-enriched biscuits. This standard prescribes minimum requirements of protein-enriched biscuits to guide the manufacturers.

0.2.1 Considering that nutritional deficiencies are often of a general nature, this standard also includes provisions for other micro-nutrients. This would ensure optimization of nutritive value of protein-enriched biscuits as well.

0.3 This standard was first published in 1974. In this revision the minimum limit for protein has been reduced and the maximum value for acidity of extracted fat has been increased. The minimum values in Table 2 of thiamine, riboflavin, nicotinic acid, iron and calcium have also been lowered to a level so that 100 g of biscuits supply one-third the recommended daily allowances for adults.

0.4 While formulating this standard, necessary consideration has been given to the relevant rules prescribed by the Government of India, under the Prevention of Food Adulteration Act, 1954. This standard is, however, subject to the restrictions imposed under the Act and the Rules framed thereunder, wherever applicable.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in

accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for protein-enriched biscuits.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Acceptance Tests — Tests (*see* **3.2**) carried out on samples selected from the lot for the purpose of the acceptance of each lot.

2.2 Type Tests — All the tests (*see* **3.3**) to approve the design and quality of the product at least in the beginning of marketing/certification. These tests may also be conducted periodically to supplement the routine tests or whenever the basic formula is changed.

3. REQUIREMENTS

3.1 Raw Materials — Essential materials and other ingredients used in the manufacture of these biscuits shall be as in IS : 1011-1981†. In particular edible oilseed flour (s), if used, shall conform to the following standards:

a) Groundnut flour — IS : 4684-1975‡ or IS : 4875-1975§;

b) Cottonseed flour — IS : 11581-1986‖ or IS : 4876-1986¶;

c) Soya flour — IS : 7835-1975**, IS : 7836-1975†† or IS : 7837-1975‡‡;

*Rules for rounding off numerical values (*revised*).

†Specification for biscuits (*second revision*).

‡Specification fer edible groundnut flour (expeller pressed) (*first revision*).

§Specification for edible groundnut flour (solvent extracted) (*first revision*).

‖Specification for edible cottonseed flour prepared by liquid cyclone process.

¶Specification for edible cottonseed flour (solvent extracted) (*first revision*).

**Specification for edible medium-fat soya flour.

††Specification for edible low-fat soya flour.

‡‡Specification fer edible full-fat soya flour.

d) Sesame flour — IS : 6108-1971* or IS : 6109-1971†; and

e) Coconut flour — IS : 8664-1977‡ or IS : 8676-1977§.

3.2 Acceptance Tests

3.2.1 *Description* — The protein-enriched biscuits shall be crisp and properly baked. The impressed design, if any, shall be clear. The biscuits shall be free from fungus and insect infestation, and rancid taste and odour.

3.2.2 *Flavour* — The flavour of the protein-enriched biscuits shall be agreeable and free from any soapy or bitter after-taste. Preservatives, antioxidants, flavours and edible colours as permitted under the PFA Rules may be added.

3.2.3 *Condition of Manufacture* — The protein-enriched biscuits shall be manufactured, packed, stored and distributed under hygienic conditions in licensed premises (*see* IS : 2491-1972‖).

3.2.4 The product shall also conform to the requirements given in Table 1.

3.3 Type Tests

3.3.1 *Protein Efficiency Ratio* (*PER*) — When determined on the basis of IS : 7481-1974¶ shall be not less than 1·8 (corrected PER).

3.3.2 *Aflatoxin* — The protein enriched biscuits shall not have total aflatoxin content more than 15 μg/kg of foods, when tested according to the method prescribed in Appendix K of IS : 4684-1975**.

3.3.3 *Gossypol* — The protein enriched biscuits shall not have a free gossypol content more than 0·03 percent by mass and a total gossypol content more than 0·6 percent by mass, when tested according to the method prescribed in Appendices A and B of IS : 4876-1986††.

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*Specification for edible sesame flour (solvent extracted).

†Specification for edible sesame flour (expeller pressed).

‡Specification for edible coconut flour (expeller pressed).

§Specification for edible coconut flour (solvent extracted).

‖Code for hygienic conditions for food processing units (*first revision*).

¶Method for determination of protein efficiency ratio (PER).

**Specification for edible groundnut flour (expeller pressed) (*first revision*).

††Specification for edible cottonseed flour (solvent extracted) (*first revision*).

TABLE 1 REQUIREMENTS FOR PROTEIN-ENRICHED BISCUITS

(*Clause* 3.2.4)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Protein, percent by mass, *Min*	12	IS : 7219-1973*
ii)	Moisture, percent by mass, *Max*	6	Appendix A of IS : 1011-1981†
iii)	Fat, percent by mass, *Min*	12	Appendix C of IS : 1547-1985‡
iv)	Acid insoluble ash, percent by mass, *Max*	·08	Appendix B of IS : 1011-1981†
v)	Crude fibre (on dry basis), percent by mass, *Max*	3·0	Appendix A of IS : 1656-1985§
vi)	Acidity of extracted fat (as oleic acid), percent by mass, *Max*	1·5	Appendix C of IS : 1011-1981†
vii)	Total bacterial count/g, *Max*	50 000	IS : 5402-1969‖
viii)	Coliform bacterial count/g, *Max*	10	IS : 5401-1969¶
ix)	Salmonella bacteria	Nil	IS : 5887 (Part 3)-1970**

*Method for determination of protein in foods and feeds.

†Specification for biscuits (*second revision*).

‡Specification for infant milk foods (*second revision*).

§Specification for milk cereal based weaning foods (*second revision*).

‖Method for standard plate count of bacteria in foodstuffs.

¶Methods for detection and estimation of coliform bacteria in foodstuffs.

**Methods for detection of bacteria responsible for food poisoning: Part 3 Isolation and identification of salmonella and shigella (*first revision*).

3.3.4 *Urease Activity* — The protein-enriched biscuits shall not show a change in *p*H by more than 0·5, when determined by the method given in Appendix D of IS : 7837-1975*.

3.3.5 The protein-enriched biscuits shall also comply with the requirements given in Table 2.

4. PACKING AND MARKING

4.1 Packing — The protein-enriched biscuits shall be packed in clean, sound containers, made of tinplate, PCRCA (pickled cold rolled coated and annealed) plates, cardboard, paper or other material agreed upon between the purchaser and the vendor, in such a way as to protect them from breakage, contamination, absorption of moisture and seepage of fat from the biscuits into the packing

*Speccification for edible full-fat soya flour.

materials. The protein-enriched biscuits shall not come in direct contact with the packing materials other than grease-proof or sulphite paper, cellulose film or any other non-toxic packing material. This packing may also be covered with a moisture-proof film, waxed paper or moisture-proof laminates or coated paper. The biscuits in tins shall not come in direct contact with the metal walls.

TABLE 2 REQUIREMENTS OF VITAMINS AND MINERALS FOR PROTEIN-ENRICHED BISCUITS

(*Clause* 3.3.5)

Sl No.	Characteristic	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Vitamin A, µg/100 g, *Min*	250	IS : 5886-1970*
ii)	Vitamin D, µg/100 g, *Min*	5	IS : 5835-1970†
iii)	Folic acid, µg/100 g, *Min*	34	Note below
iv)	Thiamine (as hydrochloride) mg/100 g, *Min*	·4	IS : 5398-1969‡
v)	Riboflavin mg/100 g, *Min*	0·50	IS : 5399-1969§
vi)	Nicotinic acid, mg/100 g, *Min*	5·0	IS : 5400-1969‖
vii)	**Calcium, mg/100 g, *Min*	200	Appendix F of
viii)	Iron, mg/100 g, *Min*	7	IS : 1656-1985¶

Note — To be checked from records showing additions made to the product.

*Methods for estimation of carotenes and vitamins A (retinol) in foodstuffs.

†Methods for estimation of vitamin D in foodstuffs.

‡Methods for estimation of thiamine (vitamin B_1) in foodstuffs.

§Methods for estimation of riboflavin (vitamin B_2) in foodstuffs.

‖Methods for estimation of nicotinic acid (niacin) in fooodstuffs.

¶Specification for milk cereal based weaning food (*second revision*).

**Can be incorporated as salts of calcium like calcium carbonate Di or Tri calcium phosphate, etc.

4.1.1 In the case of packets weighing 150 g and above, a complaint slip giving batch or code number, month and year of manufacture shall be included in the container.

4.2 Marking — The following particulars shall be marked or labelled on each container:

a) Name of the material and the trade-name or brand name, if any;

b) Name and address of the manufacturer;

c) Batch or code number;

d) Net mass;

e) Date of manufacture;

f) The statement 'permitted flavouring and colouring agents used' if used;

g) Composition of 100 g of material giving protein, fat, vitamins and minerals added, calories per 100 g and mass of 10 biscuits;

h) Names and quantities of amino acids, if added;

j) Directions for use including the quantity of product which would meet the full daily requirements of vitamins and minerals of an adult; and

k) Other labelling requirements according to the provisions of the Standards of Weights and Measures (Packaged Commodities) Rules, 1977.

4.2.1 The container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING AND CRITERIA FOR CONFORMITY

5.1 For ascertaining the conformity of the material to the requirements of this specification, samples shall be tested from each lot separately.

5.2 The representative samples shall be drawn as per Table 2 of IS : 1011-1981*.

5.3 Number of Tests

5.3.1 Tests for moisture shall be conducted individually on each of the samples constituting a set of individual samples.

*Specification for biscuits (*second revision*).

5.3.2 Tests for the determination of protein, fat, acid insoluble ash, crude fibre and acidity of extracted fat shall be conducted on the composite sample.

5.3.3 Microbiological tests shall be conducted on individual samples prepared for these tests.

5.4 Criteria for Conformity — A lot shall be declared as conforming to the requirements of the specification for biscuits when the following criteria are satisfied:

a) In case of general requirements the biscuits shall satisfy the requirements given in **3.2.1**;

b) In case of moisture each of the tests results as obtained from the individual samples shall be less than or equal to 6 percent;

c) For the remaining characteristics the test results obtained from the composite sample shall conform to the corresponding requirements given in Table 1; and

d) Each individual sample shall pass the requirements of micro-biological tests given in the specification.

6. TESTS

6.1 Tests shall be carried out as prescribed in **3.2, 3.3** and Tables 1 and 2.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

*Specification for water for general laboratory use (*second revision*).

(*Continued from page 2*)

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